



American Journal of Educational Leadership & Policy Studies (AJELPS)

ISSN: 3069-3667 (ONLINE)

VOLUME 2 ISSUE 2 (2026)



PUBLISHED BY
E-PALLI PUBLISHERS, DELAWARE, USA

Exploring the Role of Hands-On Learning Activities in Supporting Preschoolers' Cognitive and Social Development: Evidence from Two Early Childhood Centres in Malawi

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Article Information

Received: May 02, 2026

Accepted: July 18, 2026

Published: October 05, 2026

Keywords

Cognitive Development, Hands-On Learning, Malawi Preschool Education, Scaffolding, Social Development, Vygotsky

ABSTRACT

Early childhood education plays a critical role in promoting children's cognitive, social, and emotional development, laying the foundation for lifelong learning and well-being. Among the pedagogical approaches widely advocated in contemporary early childhood education, hands-on learning has gained increasing recognition for its potential to foster active engagement, problem-solving, communication, and collaborative learning. Despite growing international evidence supporting activity-based and experiential learning approaches, limited research has examined how hands-on learning activities support child development within preschool settings in Malawi. Furthermore, the study sort to fill the gap on the role of promoting children's cognitive, social and emotional development by exploring how hands-on learning activities influence preschoolers' cognitive and social development and identify factors that affect their effective implementation as specific gaps identified. Drawing from Vygotsky's sociocultural theory, this study explored the role of hands-on learning activities in supporting preschoolers' cognitive and social development in two early childhood centers in Lilongwe, Malawi. A qualitative-dominant comparative case study design was employed involving classroom observations, semi-structured teacher interviews, and document analysis. Data were collected from two preschool centers serving children aged three to six years and analyzed by using themes. Interview transcripts, observation notes, and documentary evidence were reviewed repeatedly to ensure familiarity with the data. The findings indicate that hands-on learning activities supported children's cognitive development through enhanced problem-solving, creativity, language development, concentration, and numeracy skills. The activities also promoted social development by encouraging cooperation, communication, sharing, empathy, and collaborative participation. However, the developmental benefits of hands-on learning appeared to depend heavily on teacher scaffolding, peer interaction, and institutional support. Centers characterized by stronger teacher guidance, planning practices, and resource availability demonstrated more consistent developmental outcomes. This study contributes to sociocultural and early childhood education literature by demonstrating that the value of hands-on learning extends beyond children's interaction with materials. Rather, developmental gains emerge through scaffolded social participation, collaborative learning, and supportive educational environments.

INTRODUCTION

Early childhood is recognized as one of the most critical periods of human development. During the first years of life, children experience rapid cognitive, social, emotional, and linguistic growth that shapes later educational achievement, social competence, and lifelong well-being. Research consistently demonstrates that high-quality early childhood education contributes significantly to school readiness, academic success, social adjustment, and long-term developmental outcomes (Camilli *et al.*, 2010; Rutter, 1985). Consequently, governments, educational institutions, and international organizations increasingly emphasize the importance of providing developmentally appropriate learning experiences during the preschool years.

Among the various approaches used in early childhood education, hands-on learning has received considerable attention as an effective strategy for promoting active engagement and meaningful learning. Hands-on learning

refers to educational experiences that involve children's direct interaction with materials, objects, and activities through exploration, manipulation, experimentation, and play. Rather than relying primarily on passive instruction, hands-on approaches encourage children to learn by doing, allowing them to construct knowledge through active participation in learning experiences (Goldin-Meadow, 2018; Satterthwait, 2010).

This study addresses this gap by exploring the role of hands-on learning activities in supporting preschoolers' cognitive and social development within two early childhood centers in Lilongwe, Malawi. Drawing on Vygotsky's sociocultural theory, the study examines how hands-on learning activities, teacher scaffolding, peer interaction, and classroom environments contribute to children's developmental experiences.

Background of the Study

Early childhood is a critical period for human development

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because it lays the foundation for later cognitive, social, emotional, and language growth (Dabrowski *et al.*, 2026). Evidence from systematic review and meta-analytic research shows that high-quality early childhood education is associated with stronger developmental and educational outcomes, including better school progression and longer-term benefits for children (Dabrowski *et al.*, 2026; McCoy *et al.*, 2017). Global scholarship emphasizes that early childhood education is most effective when it is developmentally appropriate, learner-centred, and rooted in active engagement rather than passive instruction (Dabrowski *et al.*, 2026). From this perspective, child-centered pedagogies are increasingly recognized as essential for supporting holistic development in the early years (Dabrowski *et al.*, 2026).

Hands-on learning is one of the child-centred approaches most often linked to positive early childhood outcomes. It allows children to learn through direct experience, manipulation of materials, exploration, and play, which supports the development of problem-solving, attention, memory, and early academic skills (Alotaibi, 2024). A recent systematic review and meta-analysis found that game-based learning in early childhood education has moderate to large effects on cognitive, social, emotional, motivation, and engagement outcomes, suggesting that active learning approaches can meaningfully support children's development (Alotaibi, 2024). The broader early childhood education literature likewise indicates that foundational skills developed in the early years include not only literacy and numeracy but also self-regulation, motivation, and social competence, all of which are important for later educational success (McCoy *et al.*, 2017).

The success of hands-on learning depends not only on the activities themselves but also on the learning environment and the teacher's role. Sociocultural theory argues that children learn best through interaction with more knowledgeable others within meaningful social contexts, making teacher scaffolding central to effective early learning (Vygotsky, 1978). In early childhood classrooms, teachers therefore play an important role in guiding children's exploration, extending their thinking, and helping them make sense of learning materials and social interactions (Vygotsky, 1978). This implies that hands-on learning should be understood as a purposeful pedagogical strategy rather than unstructured play alone. When properly facilitated, it can contribute to both cognitive growth and social development in preschool children (Vygotsky, 1978; Alotaibi, 2024).

In sub-Saharan Africa, early childhood education has gained increasing policy attention, but access and quality challenges remain substantial (Dabrowski *et al.*, 2026). Scholarly reviews note that many low- and middle-income contexts continue to face weak monitoring systems, limited data on quality, and uneven provision of early learning opportunities (Dabrowski *et al.*, 2026). These limitations affect the implementation of child-centred and hands-on approaches in preschool settings,

especially where learning materials, teacher preparation, and classroom support are inadequate (Dabrowski *et al.*, 2026). As a result, there is still a need for more context-specific evidence on how classroom practices influence children's developmental outcomes in African settings (Dabrowski *et al.*, 2026).

In Malawi, the need for such evidence is particularly pressing. The National Policy on Early Childhood Development emphasizes that young children learn through active exploration, play, and interaction, and it places strong value on child-centred early learning experiences (Government of Malawi, 2017). At the same time, the policy documents serious sector challenges, including inadequate access to early childhood services, limited learning materials, and shortages of trained caregivers (Government of Malawi, 2017). It also reports that only 45.36% of targeted children attended ECD centers in 2016, underscoring the scale of participation gaps (Government of Malawi, 2017). Despite these policy commitments, there remains limited empirical research in Malawi on how hands-on learning activities contribute to preschoolers' cognitive and social development in practice. This study therefore seeks to address that gap by examining the role of hands-on learning activities in supporting preschool children's cognitive and social development and by generating evidence that can inform practice and policy in Malawi (Government of Malawi, 2017).

Problem Statement

Hands-on learning is widely recognized as an effective approach for enhancing preschool children's cognitive and social development. Despite its documented benefits, its implementation in many early childhood education centres remains inconsistent due to challenges such as inadequate teaching resources, limited teacher preparation, overcrowded classrooms, and insufficient instructional support. As a result, many preschool children may not fully benefit from developmentally appropriate learning experiences that foster critical thinking, collaboration, communication, and problem-solving skills.

In Malawi, limited empirical research has examined how hands-on learning activities contribute to preschoolers' cognitive and social development within classroom settings. The lack of context-specific evidence makes it difficult for educators, curriculum developers, and policymakers to strengthen teaching practices that effectively support children's holistic development. This study therefore seeks to explore how hands-on learning activities influence preschoolers' cognitive and social development and identify factors that affect their effective implementation.

Main Objective

To explore the role of hands-on learning activities in supporting preschoolers' cognitive and social development.

Specific Objectives

1. To identify the hands-on learning activities implemented in preschool classrooms.
2. To examine how hands-on learning activities support preschoolers' cognitive development.
3. To assess how hands-on learning activities support preschoolers' social development.
4. To identify factors influencing the effective implementation of hands-on learning activities in preschool settings.

Purpose of the Study

The purpose of this study is to explore how hands-on learning activities support preschoolers' cognitive and social development. Specifically, the study seeks to examine the types of hands-on learning activities used in preschool classrooms, determine their contribution to children's cognitive and social development, and identify factors influencing their effective implementation. The findings are expected to provide evidence that will assist teachers, school administrators, curriculum developers, and policymakers in improving child-centred teaching practices and strengthening the quality of early childhood education.

LITERATURE REVIEW

Hands-On Learning and Cognitive Development

Hands-on learning has become a widely endorsed pedagogical approach in contemporary education due to its potential to promote active engagement, deeper understanding, and meaningful learning experiences. Unlike traditional teacher-centered approaches that emphasize passive reception of information, hands-on learning involves direct interaction with materials, objects, and experiences through exploration, manipulation, experimentation, and problem-solving. This approach is particularly relevant in early childhood education, where young children learn most effectively through active participation and sensory engagement.

Research suggests that hands-on learning supports cognitive development by encouraging learners to construct knowledge through experience rather than memorization. Goldin-Meadow (2018) argues that physical engagement with learning materials promotes cognitive growth across developmental stages, supporting language acquisition, conceptual understanding, and mathematical reasoning. Similarly, Ting and Tai (2019) contend that hands-on learning enhances cognitive engagement by enabling learners to connect abstract concepts with concrete experiences. Such experiences allow children to develop problem-solving abilities, critical thinking skills, and conceptual understanding through active participation.

The relationship between hands-on learning and cognitive development has been documented across various educational contexts. Yannier *et al.* (2021) emphasize that effective learning occurs when hands-on activities are integrated with minds-on engagement, whereby

learners actively reflect on and interpret their experiences. Likewise, Thuneberg *et al.* (2018) found that inquiry-based hands-on learning promotes creativity, visual reasoning, and mathematical understanding among young learners. These findings suggest that cognitive development is enhanced when children are provided opportunities to manipulate materials, investigate phenomena, and construct meaning through guided exploration.

However, the effectiveness of hands-on learning remains a subject of debate. Schwichow *et al.* (2016) caution that hands-on activities do not automatically result in superior learning outcomes. Their review demonstrated that physical manipulation of materials alone does not guarantee improved understanding unless accompanied by meaningful instructional guidance and opportunities for reflection. This perspective highlights the importance of examining not only the activities themselves but also the instructional and social contexts in which they occur. In early childhood settings, hands-on activities such as block construction, counting exercises, drawing, sorting, role play, storytelling, puzzles, and exploratory play experiences provide opportunities for children to develop foundational cognitive skills. These activities support language development, numeracy, concentration, creativity, and problem-solving while simultaneously encouraging active participation in learning. Consequently, hands-on learning is increasingly viewed as an essential component of developmentally appropriate practice in early childhood education.

Hands-On Learning and Social Development

While hands-on learning is associated with cognitive growth, an expanding body of literature highlights its contribution to children's social and emotional development. Early childhood learning environments are inherently social spaces in which children interact with teachers, peers, and learning materials. Through collaborative participation in hands-on activities, children develop communication skills, social awareness, empathy, cooperation, and interpersonal competence.

Norman and Combs-Richardson (2001) argue that effective hands-on learning extends beyond academic content to include social and ethical development. Participation in collaborative learning activities encourages children to negotiate meaning, share resources, resolve conflicts, and develop positive relationships with peers. These experiences contribute to the development of social competencies that support successful participation in educational settings and broader society.

Similarly, Paris (2015) found that experiential and service-learning activities in preschool settings promoted empathy, moral development, and prosocial behavior. Children who participated in structured collaborative activities demonstrated increased sensitivity to others, improved communication skills, and stronger social relationships. These findings suggest that hands-on learning provides opportunities for children to develop not only cognitive competencies but also social and emotional capacities

that contribute to holistic development.

Morcom (2014) further emphasizes the importance of relationships and emotions in learning processes. Drawing on sociocultural perspectives, Morcom argues that learning occurs within classroom communities characterized by trust, belonging, and supportive interactions. In a subsequent study, Morcom (2015) demonstrated that social and emotional learning can be scaffolded through the creation of shared affective spaces that encourage cooperation, empathy, and prosocial behavior. These findings are particularly relevant to preschool education, where social interaction constitutes a central mechanism through which learning occurs.

Recent work by Chen and Badolato (2025) reinforces these arguments by demonstrating that teacher scaffolding plays a critical role in supporting social and emotional learning among preschool children, particularly in low-resource contexts. Their findings suggest that structured guidance, collaborative participation, and supportive classroom environments contribute significantly to children's social development. Collectively, these studies indicate that hands-on learning activities function not only as vehicles for cognitive growth but also as important contexts for social and emotional development.

Vygotsky's Sociocultural Theory

The present study is grounded in Vygotsky's sociocultural theory, which provides a powerful framework for understanding how learning and development occur through social interaction. Vygotsky (1978) argued that cognitive development is fundamentally shaped by social and cultural experiences. Rather than viewing learning as an individual process, he emphasized that higher mental functions emerge through interaction with others before becoming internalized by the learner. According to Vygotsky, children's development is influenced by participation in culturally meaningful activities mediated by language, tools, symbols, and social relationships. Learning occurs through interaction with more knowledgeable others, including teachers, parents, and peers, who provide guidance and support that enable children to perform tasks beyond their current level of competence. From this perspective, learning is inherently social and collaborative.

The influence of Vygotsky's ideas on educational theory and practice has been substantial. Davydov (1995) notes that sociocultural theory transformed understandings of learning by emphasizing the role of social mediation in cognitive development. Daniels (1996) similarly argues that Vygotsky's work remains highly relevant because it highlights the interconnectedness of learning, culture, and social interaction. Contemporary educational research continues to draw on sociocultural principles to explain how learning environments shape developmental outcomes, Verenikina (2010).

Within early childhood education, Vygotsky's theory provides a useful lens for examining hands-on learning activities. Rather than viewing learning materials as

inherently educational, sociocultural theory suggests that developmental benefits emerge through social interaction, communication, and guided participation surrounding those materials. Consequently, the value of hands-on learning depends on how activities are structured and supported within classroom environments.

Scaffolding and the Zone of Proximal Development

One of Vygotsky's most influential concepts is the Zone of Proximal Development (ZPD), defined as the distance between what a child can accomplish independently and what the child can achieve with guidance from a more knowledgeable other Vygotsky (1978). The ZPD highlights the importance of instructional support in facilitating development and provides a theoretical explanation for how learning contributes to cognitive growth.

The concept of scaffolding emerged from this theoretical tradition and refers to the temporary support provided by teachers or peers to assist learners in accomplishing tasks beyond their independent capabilities. As learners develop competence, support is gradually withdrawn, enabling greater autonomy, Berk & Winsler (1995). Verenikina (2003) argues that scaffolding represents one of the most practical applications of Vygotskian theory in educational settings. Effective scaffolding involves questioning, prompting, modeling, feedback, and encouragement that support learners' participation in increasingly complex activities. Similarly, Van Der Stuyf (2002) emphasizes that scaffolding promotes learning by helping children bridge the gap between current abilities and potential capabilities. Research consistently demonstrates the value of scaffolding in educational contexts, with Fani and Ghaemi (2011) arguing that instructional support within the ZPD enhances learners' cognitive development and academic achievement.

Social Interaction and Collaborative Learning

A central assumption of sociocultural theory is that learning occurs through participation in social interaction. Vygotsky argued that higher mental processes originate in social relationships before becoming internalized by individuals. Consequently, peer collaboration and shared problem-solving are viewed as important mechanisms through which learning occurs. Hogan and Tudge (2014) emphasize that collaborative learning provides opportunities for children to construct knowledge through interaction with others. Through discussion, negotiation, and joint activity, learners encounter diverse perspectives and develop increasingly sophisticated understandings of concepts and tasks. Similarly, Topciu and Myftiu (2015) found that social interaction plays a crucial role in preschool children's cognitive and social development.

Gauvain (2001) further argues that cognitive development is shaped by the social contexts in which learning occurs. Classrooms provide structured environments where children engage in culturally meaningful activities that

support intellectual growth. Tudge and Rogoff (2014) similarly demonstrate that peer interaction contributes significantly to cognitive development by encouraging shared problem-solving and collaborative participation. These perspectives are particularly relevant to hands-on learning activities, which often involve group work, cooperative play, and collaborative exploration.

Coactive Scaffolding and Classroom Community

Contemporary sociocultural scholars have expanded traditional understandings of scaffolding by emphasizing the collective and relational nature of learning. Mascolo (2005) introduces the concept of coactive scaffolding, arguing that development emerges through interactions among teachers, peers, learning materials, and environmental conditions rather than through teacher support alone. This perspective aligns with research highlighting the importance of classroom communities in promoting learning and development. Morcom (2014) argues that supportive classroom relationships create conditions that facilitate both cognitive and social growth. Similarly, Haslam *et al.* (2019) suggest that shared social identities and feelings of belonging contribute to developmental outcomes by fostering engagement, participation, and cooperation.

Recent studies indicate that teacher scaffolding influences both intellectual and social collaboration. Kraatz *et al.* (2020) found that effective teachers support learning by facilitating meaningful interactions among learners and creating opportunities for collaborative engagement. Such findings suggest that developmental outcomes are shaped by interconnected systems of support rather than isolated instructional practices. Drawing together these perspectives, the present study conceptualizes hands-on learning activities as socially mediated experiences embedded within broader classroom communities, where cognitive and social development are understood as outcomes of coactive scaffolding processes involving teacher guidance, peer interaction, collaborative participation, and supportive learning environments.

MATERIALS AND METHODS

Research Design

This study employed a qualitative-dominant comparative case study design to explore the role of hands-on learning activities in supporting preschoolers' cognitive and social development within two early childhood centers in Malawi. A qualitative approach was considered appropriate because the study sought to develop an in-

depth understanding of how hands-on learning activities were implemented and experienced within authentic classroom settings, rather than to measure or quantify outcomes across large samples. The study was guided by a sociocultural perspective that emphasizes understanding learning as a socially mediated process embedded within specific educational environments.

The comparative design enabled the identification of similarities and differences between the selected centers regarding the use of hands-on learning activities, teacher practices, learning resources, and observed developmental outcomes. By examining two contrasting contexts, the study was able to generate richer insights into the contextual factors that influence the implementation and effectiveness of hands-on learning approaches. A case study design was considered well-suited to this purpose because it allowed for detailed, context-sensitive examination of phenomena within their natural settings.

Study Setting and Participants

The study was conducted in two preschool centers located in the Lilongwe District, Malawi, purposively selected for their contrasting educational contexts while both implementing activity-based learning approaches. The first center, Christian Heritage School, represented a relatively well-resourced educational environment characterized by structured lesson planning, a variety of commercially produced and locally adapted learning materials, and established assessment practices. The second center, Kahela Academy, provided a less-resourced context in which teachers relied on improvised and locally sourced materials to implement hands-on activities. Both centers served children aged three to six years.

Participants were selected using purposive sampling to ensure inclusion of individuals directly involved in preschool teaching and learning processes. The study included four preschool teachers (two from each center) who provided insights into instructional practices and children's developmental experiences. Thirty preschool learners were observed during routine classroom activities to gather direct evidence of engagement and developmental behaviors. The teachers were selected because they possessed direct knowledge of instructional practices, curriculum implementation, and children's developmental experiences. The learners were not interviewed directly; rather, their participation was observed during naturalistic classroom activities.

Table 1 summarizes participant demographics and centre characteristics.

Table 1: Participant Demographics and Centre Characteristics

Characteristic	Christian Heritage School	Kahela Academy
Location	Lilongwe District, Malawi	Lilongwe District, Malawi
Resource context	Well-resourced; structured planning	Less-resourced; improvised materials
Age range served	3–6 years	3–6 years
Teachers observed	2	2
Learners observed	~15	~15
Assessment practices	Systematic lesson plans and records	Less systematic documentation

Data Collection Methods

Data were collected through multiple sources to facilitate triangulation and enhance the credibility of findings. Non-participant classroom observations constituted the primary source of data. Observations focused on the types of hands-on learning activities implemented, children's participation during activities, teacher-child interactions, peer interactions, classroom organization and learning environment, and the cognitive and social behaviors demonstrated by learners. Observation sessions were conducted during normal school activities to minimize disruption to instructional routines, with detailed field notes recorded throughout.

Semi-structured interviews were conducted with the four preschool teachers. The interviews explored teachers' understanding of hands-on learning, perceived benefits of hands-on activities, strategies used to support children's learning, challenges encountered during implementation, and observations regarding children's cognitive and social development. The semi-structured format provided flexibility while ensuring consistency across participants, enabling teachers to discuss their experiences in depth. Interviews were conducted in locations convenient for participants and were recorded with permission before being transcribed for analysis.

Document analysis was conducted to provide additional contextual information and to corroborate findings from observations and interviews. Documents reviewed included lesson plans, activity schedules, assessment records, children's work samples, and curriculum-related materials. The document review enabled examination of how hands-on learning activities were planned, implemented, and assessed within each center.

Data Analysis and Trustworthiness

Data analysis followed a thematic analysis approach. Interview transcripts, observation notes, and documentary evidence were reviewed repeatedly to ensure familiarity with the data. Initial codes were generated to identify meaningful patterns related to hands-on learning activities and children's development. Related codes were grouped into broader categories and themes, which were subsequently reviewed and refined to ensure coherence and alignment with the research questions. The analysis generated four major themes addressing hands-on learning practices, cognitive development outcomes, social development outcomes, and institutional factors influencing implementation.

Several strategies were employed to enhance the trustworthiness of the study. Credibility was addressed through data triangulation across observations, interviews, and document analysis. Detailed descriptions of the research setting, participants, and learning environments were provided to support transferability to similar contexts. An audit trail was maintained throughout the research process to document decisions related to data collection, coding, and analysis, supporting dependability. Reflective notes were maintained during data collection and analysis to minimize personal bias and ensure that

interpretations remained grounded in participants' experiences and observed practices.

RESULTS AND DISCUSSION

The findings are presented under four major themes that emerged from the analysis of classroom observations, teacher interviews, and document review. These themes illustrate how hands-on learning activities were implemented within the two preschool centers and how they contributed to children's cognitive and social development. The findings further highlight the importance of teacher scaffolding and institutional support in maximizing the developmental value of hands-on learning experiences.

Theme 1: Hands-On Learning Practices Across the Two Centres

Observations revealed that both centers incorporated activity-based learning approaches, though with differing frequency, structure, and quality. Children participated in block construction, drawing, counting, sorting, storytelling, role play, singing, movement activities, manipulation of locally available materials, and puzzle-solving. Teachers consistently reported that hands-on learning was crucial because young children learn best through active involvement. As one teacher explained:

"Children understand better when they touch, build, count, draw, and participate in activities. When they only listen, many lose interest quickly."

Christian Heritage School demonstrated a more structured approach with regularly prepared materials, organized activity stations, and integrated assessment. Observations indicated carefully sequenced activities aligned with learning objectives, with children encouraged to explain their thinking and share ideas. Kahela Academy, while creative in resource utilization, relied more on improvised materials, occasionally limiting activity range. Document analysis showed that Christian Heritage maintained more comprehensive lesson plans and assessment records. Despite these differences, both centers showed clear commitment to activity-based learning, and observations consistently showed high levels of learner engagement. Children displayed curiosity, enthusiasm, persistence, active participation, and willingness to collaborate, with many remaining focused for extended periods during practical tasks.

Theme 2: Cognitive Development Through Hands-On Learning

Hands-on activities supported multiple dimensions of cognitive growth. During block construction activities, children experimented with different arrangements and adjusted their approaches when structures collapsed; puzzle-solving required identifying relationships, evaluating alternatives, and persistence. One teacher noted:

"When children build things or solve puzzles, they learn how to think for themselves. They try different ways until they succeed."

Counting objects, matching quantities, sorting by

attributes, and recognizing patterns were common numeracy activities. Teachers reported that these activities made abstract mathematical concepts more accessible through physical manipulation, and observations confirmed increased confidence in mathematical concepts through practical engagement. Role play, storytelling, and group activities fostered language development: Children frequently asked questions, explained ideas, described actions, and shared experiences, with teachers observing improved communication and vocabulary during collaborative tasks. Drawing, construction, and imaginative play provided further opportunities for self-expression and creativity, with one teacher remarking:

"Children become very creative when given materials and freedom to explore. Sometimes they create things we did not expect."

Hands-on learning promoted sustained attention. Children remained engaged for extended periods, especially with challenging, teacher-supported tasks, with teachers reporting that practical activities helped learners focus more effectively through active participation.

Theme 3: Social and Emotional Development Through Hands-On Learning

Activity-based learning provided important opportunities for interpersonal skill development and positive social behaviors. Collaborative activities such as group construction, role-play, and cooperative games required teamwork. Observations revealed children negotiating responsibilities, exchanging ideas, and assisting peers. A teacher explained:

"When children work together, they learn how to listen, share, and help each other."

Children regularly interacted with peers and teachers while sharing materials, explaining ideas, asking questions, and negotiating roles, with improvements in self-expression and effective communication observed particularly during collaborative and imaginative play. Teachers used disagreements that arose during activities as opportunities to teach conflict resolution and empathy, noting increased willingness to share, assist peers, and resolve conflicts peacefully over time. Many children also gained confidence through hands-on activities: practical

tasks encouraged participation from previously reluctant children, and successful task completion enhanced self-confidence and willingness to contribute. Collaborative activities further fostered a positive classroom atmosphere of inclusion, with children enjoying working together and seeking peer engagement in ways that contributed to their sense of belonging within the classroom community.

Theme 4: Teacher Scaffolding and Institutional Factors Influencing Development

Contextual factors significantly influenced the developmental value of hands-on learning. Teacher support was critical: effective teachers asked guiding questions, provided demonstrations, encouraged exploration, offered feedback, and supported peer interaction. Children benefited most from structured support combined with opportunities for independent participation. Christian Heritage School had greater access to learning toys, manipulatives, storybooks, art materials, and assessment resources. While Kahela Academy used local materials creatively, resource limitations occasionally restricted the range and quality of activity opportunities available to children.

Teachers at both centers identified training in child-centered and activity-based approaches as important for their practice. They expressed interest in further professional development in hands-on learning strategies, classroom management, assessment, and child development. Differences in planning and assessment practices between centers were notable: Christian Heritage School maintained more structured lesson plans and assessment systems, ensuring activities aligned with developmental objectives, while Kahela Academy's documentation was less systematic. Collectively, these findings suggest that the developmental benefits of hands-on learning depend on broader instructional and organizational conditions, including school leadership, resource availability, teacher collaboration, and curriculum support.

Conceptual Model

The model positions hands-on learning activities at the

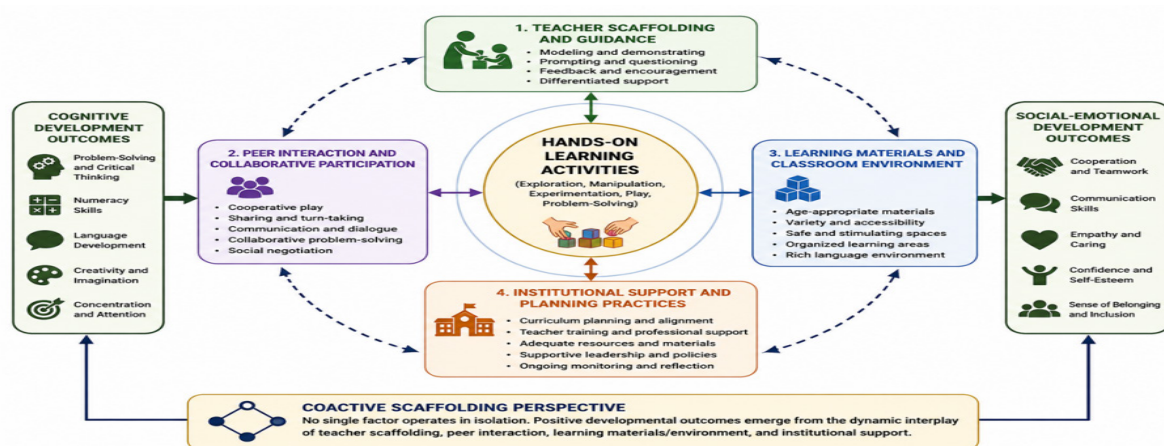


Figure 1: Conceptual Model of Hands-On Learning Activities and Preschool Development

Source: Authors' conceptualization based on Vygotsky's Sociocultural Theory, the Coactive Scaffolding perspective, and findings from the present study.

center, surrounded by four mutually reinforcing domains: teacher scaffolding and guidance, peer interaction and collaborative participation, learning materials and classroom environment, and institutional support and planning practices. Together, these domains mediate the relationship between activity-based instruction and dual developmental outcomes: cognitive development (problem-solving, numeracy, language, creativity, concentration) and social-emotional development (cooperation, communication, empathy, confidence, belonging). The model reflects the coactive scaffolding perspective by showing that no single factor operates in isolation; rather, positive developmental outcomes emerge from the dynamic interplay of all four surrounding domains.

Discussion

The purpose of this study was to explore the role of hands-on learning activities in supporting preschoolers' cognitive and social development within two early childhood centers in Malawi. Drawing on Vygotsky's sociocultural theory, the study examined how hands-on learning activities, teacher scaffolding, peer interaction, and institutional support contributed to children's developmental experiences. The findings suggest that hands-on learning activities promoted cognitive and social development; however, their effectiveness depended largely on the quality of instructional support, social interaction, and the classroom environments surrounding those activities.

A central contribution of this study is the demonstration that hands-on learning activities function not merely as opportunities for children to manipulate materials but as socially mediated learning experiences through which cognitive, social, and emotional development occur simultaneously. This finding supports contemporary sociocultural perspectives that emphasize learning as a collaborative and context-dependent process.

Hands-On Learning as a Catalyst for Cognitive Development

The findings indicate that hands-on learning activities supported multiple dimensions of cognitive development, including problem-solving, language development, numeracy skills, creativity, and concentration. Children who engaged in practical activities demonstrated active engagement and sustained participation in learning tasks. These findings are consistent with previous research highlighting the cognitive benefits of hands-on learning. Goldin-Meadow (2018) argues that active engagement with materials promotes deeper conceptual understanding and supports children's cognitive growth across developmental stages. Similarly, Ting and Tai (2019) found that hands-on learning facilitates cognitive engagement by enabling learners to connect abstract concepts with concrete experiences. The present study supports these perspectives by demonstrating that practical learning experiences provided opportunities

for children to explore, experiment, and construct understanding through direct interaction with their environment.

The findings also align with research suggesting that hands-on learning promotes creativity and problem-solving. Thuneberg *et al.* (2018) reported that inquiry-based activities encourage visual reasoning, creativity, and mathematical understanding. Children in the present study frequently demonstrated creativity and persistence during construction, drawing, and exploratory activities, suggesting that hands-on learning provides opportunities for children to generate ideas, test solutions, and develop cognitive flexibility. From a sociocultural perspective, however, cognitive development cannot be attributed solely to interaction with materials. Vygotsky (1978) argued that learning occurs through social mediation rather than independent discovery alone. Consequently, the developmental benefits observed in this study are best understood not as products of materials themselves but as outcomes of socially mediated learning experiences involving teachers, peers, and educational resources.

Teacher Scaffolding and the Zone of Proximal Development

One of the most significant findings of the study was the central role of teacher guidance in facilitating learning. Children appeared to benefit most when teachers actively supported participation through questioning, feedback, modeling, demonstration, and encouragement. This finding strongly supports Vygotsky's (1978) concept of the ZPD: the observed interactions suggest that teachers frequently helped children move beyond their current levels of competence by providing temporary support that enabled successful participation in challenging activities. The findings are consistent with research on scaffolding in educational contexts. Berk and Winsler (1995) argue that effective scaffolding enables children to perform tasks that would otherwise be beyond their independent capabilities, while Verenikina (2003) emphasizes that scaffolding supports learning by providing guidance that gradually promotes learner autonomy.

Importantly, the findings support Schwichow *et al.*'s (2016) argument that hands-on activities alone do not automatically produce learning outcomes. The developmental benefits observed in this study appeared strongest when practical activities were accompanied by purposeful instructional support. The differences observed between the two centers further reinforce this conclusion: the center characterized by stronger planning, assessment, and instructional support demonstrated more consistent evidence of developmental engagement, suggesting that teacher practices may be more influential than material availability alone in determining the effectiveness of hands-on learning.

Social Interaction as a Mechanism for Learning

A second major finding concerns the role of social interaction in supporting children's development. Hands-

on learning activities frequently involved collaboration, communication, cooperation, and shared problem-solving, and these interactions appeared to facilitate both cognitive and social growth. This finding is consistent with Vygotsky's (1978) proposition that higher mental functions emerge first through social interaction before becoming internalized by individuals. The findings support Hogan and Tudge's (2014) argument that collaborative learning creates opportunities for children to construct knowledge through interaction with others. Children in the present study frequently exchanged ideas, negotiated solutions, shared resources, and assisted one another during learning activities, providing opportunities for learners to encounter diverse perspectives and engage in joint meaning-making processes.

The findings further align with Gauvain's (2001) argument that cognitive development is shaped by the social contexts in which learning occurs. Differences observed between the two centres appear to reflect not only variations in resources but also differences in the quality of social interactions, teacher support, and classroom organization. Consequently, the developmental value of hands-on learning cannot be separated from the social environments within which it is embedded.

Hands-On Learning and Social-Emotional Development

Beyond cognitive outcomes, the findings indicate that hands-on learning activities contributed significantly to children's social and emotional development. Learners demonstrated cooperation, communication, empathy, sharing, teamwork, confidence, and positive peer relationships during collaborative activities. These findings support Morcom's (2014) argument that emotions and relationships are fundamental components of learning environments: learning does not occur solely at the cognitive level but is deeply influenced by social and emotional experiences. The findings are also consistent with Morcom's (2015) concept of shared affective spaces, which emphasizes the role of supportive classroom environments in promoting prosocial behavior and social-emotional learning. Recent research by Chen and Badolato (2025) similarly demonstrates that teacher scaffolding plays a critical role in supporting preschool children's social and emotional development. The present findings support this perspective by showing that social outcomes emerged most consistently in classrooms where teachers actively facilitated interaction, communication, and collaborative participation.

Coactive Scaffolding and Classroom Community

One of the most important theoretical contributions of this study lies in its support for contemporary sociocultural understandings of coactive scaffolding. Traditional interpretations of scaffolding often focus primarily on teacher-child interactions. However, the findings indicate that learning was influenced by a broader network of

relationships involving teachers, peers, learning materials, and institutional structures. Mascolo (2005) describes this process as coactive scaffolding, whereby development emerges through dynamic interactions among multiple participants and environmental factors. The concept helps explain why similar hands-on activities sometimes produced different developmental experiences across the two centers: learning outcomes appeared to reflect the combined influence of multiple factors rather than any single instructional practice. This interpretation is further supported by Kraatz *et al.* (2020) and Haslam *et al.* (2019), whose work collectively underscores the importance of classroom community and institutional conditions in shaping developmental outcomes.

Contribution to Theory and Practice

This study contributes to the growing body of literature on hands-on learning and sociocultural theory by providing evidence from an under-researched African context. The findings extend sociocultural theory by demonstrating that the developmental value of hands-on learning activities lies not simply in children's interaction with materials but in the social processes that surround those interactions. Teacher guidance, peer collaboration, classroom relationships, and institutional support emerged as interconnected mechanisms that facilitated learning. The study, therefore, proposes a sociocultural interpretation of hands-on learning in which cognitive, social, and emotional development are viewed as mutually reinforcing outcomes of scaffolded participation within classroom communities. This perspective moves beyond simplistic assumptions that hands-on activities are inherently effective and highlights the importance of social mediation in shaping developmental outcomes.

Implications for Policy and Practice

The findings of this study have important implications for early childhood education policy, teacher education, curriculum implementation, and classroom practice in Malawi and other low-resource contexts.

Implications for Classroom Practice

The findings highlight the importance of adopting child-centered and activity-based teaching approaches within preschool classrooms. Teachers should move beyond traditional teacher-directed instruction and create opportunities for children to actively participate in learning through exploration, manipulation, experimentation, and collaborative activities. Hands-on learning activities such as block construction, storytelling, role play, counting exercises, drawing, and problem-solving tasks should be integrated regularly into classroom routines. However, these activities should not be viewed as ends in themselves. Rather, teachers should provide purposeful guidance through questioning, feedback, modeling, and encouragement to help children engage with materials and extend their thinking.

Implications for Teacher Education and Professional Development

Teacher education programs and professional development initiatives should emphasize child-centered pedagogies, hands-on learning strategies, and effective scaffolding techniques. Training should focus on helping teachers understand how to create supportive learning environments that promote social interaction, collaboration, and active participation. Furthermore, professional development should address strategies for adapting hands-on activities to low-resource contexts, utilizing locally available materials, and integrating assessment into activity-based learning.

Implications for Curriculum Development

Curriculum frameworks should explicitly recognize the importance of hands-on learning activities in promoting holistic child development. Curriculum guidelines should provide examples of developmentally appropriate activities, emphasize the role of teacher scaffolding, and encourage the use of diverse learning materials. Furthermore, curriculum developers should consider how to integrate social and emotional learning outcomes into activity-based approaches, recognizing that cognitive and social development are interconnected.

Implications for Policy and Institutional Support

Policy makers and educational leaders should prioritize investments in early childhood education, particularly in low-resource contexts. This includes providing adequate funding for learning materials, supporting teacher training initiatives, and creating policies that encourage child-centered pedagogies. Furthermore, institutional support for teacher collaboration, planning, and assessment practices is essential for maximizing the developmental value of hands-on learning experiences.

CONCLUSION

This study explored the role of hands-on learning activities in supporting preschoolers' cognitive and social development within two early childhood centers in Lilongwe, Malawi. The findings demonstrate that hands-on learning activities contribute significantly to children's problem-solving, numeracy, language development, creativity, concentration, cooperation, communication, sharing, empathy, and confidence. However, the effectiveness of these activities is strongly mediated by teacher scaffolding, peer interaction, and institutional support. The study highlights the importance of embedding hands-on learning within supportive social and instructional environments to promote holistic child development. The findings have important implications for educators, policy makers, and curriculum developers seeking to strengthen early childhood education in Malawi and similar contexts. Future research should explore longitudinal effects of scaffolded hands-on learning on developmental trajectories and investigate how context-specific adaptations in low-resource settings can maximize the benefits of activity-based approaches.

Funding Statement

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to ethical and institutional requirements.

Ethical Approval

Ethical approval for this study was obtained from the Malawi Assemblies of God University Research and Ethics Committee (MAGUREC). Participation was voluntary, and informed consent was obtained from all participants. Because the study involved preschool learners, observations were conducted in accordance with institutional guidelines and with permission from school authorities and parents. Confidentiality and anonymity were maintained throughout the study, with pseudonyms used for all identifying information.

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